Study of the effectiveness of solar heat gain and day light factors on minimizing electricity use in high rise buildings

Abstract:

Over half of the total electricity consumption is used in buildings. Air-conditioning and electric lighting are the two main resources of electricity consumption in high rise buildings. One way to reduce electricity consumption would be to limit heat gain into buildings, therefore reduce the demand for air-conditioning during hot summer months especially in hot regions. On the other hand natural daylight can be used to reduce the use of electricity for artificial lighting. In this paper effective factors on minimizing heat gain and achieving required day light were reviewed.As daylight always accompanied by solar heat gain. Also interactions between heat gain and daylight were discussed through previous studies and equations which are related to heat gain and day lighting especially in high rise buildings. As a result importance of building's form and its component on energy consumption in buildings were clarified.